

CHECKLIST TO DESIGNATE AREAS OF EVALUATION FOR REQUESTS FOR PROPOSAL (RFP)

PROJECT MANAGER			JOB NUMBER (JN)	CONTROL SECTION (CS)
DESCRIPTION IF NO JN/CS				
MDOT PROJECT MANAGER: Check all items to be included in RFP. WHITE = REQUIRED GRAY SHADING = OPTIONAL			CONSULTANT: Provide only checked items below in proposal.	
Check the appropriate Tier in the box below				
TIER I (\$25,000-\$99,999)	TIER II (\$100,000-\$250,000)	TIER III (>\$250,000)		
			Understanding of Service	
			<i>Innovations</i>	
			<i>Safety Program</i>	
N/A			Organization Chart	
			Qualifications of Team	
			Past Performance	
Not required as part of official RFP	Not required as part of official RFP		Quality Assurance/Quality Control	
			Location of Service Personnel (Only check for on-site inspection services)	
N/A	N/A		Presentation	
N/A	N/A		Technical Proposal (if Presentation is required)	
3 pages including cover sheet (No Resumes)	7 pages	19 pages	Total maximum pages for RFP not including key personnel resumes	

**BUREAU OF HIGHWAYS
REQUEST FOR PROPOSAL
for
QUALIFICATIONS BASED SELECTION FOR PREQUALIFIED SERVICES**

The Michigan Department of Transportation (MDOT) is seeking professional services for the project contained in the attached scope of services.

If your firm is currently prequalified for this type of work and you are interested in providing services, please indicate your interest by submitting a Proposal. The Proposal must be submitted in accordance with the latest "Vendor Selection Guidelines for Service Contracts", available on the MDOT website.

For efficiency sake, we are asking that the vendor firm provide **[3]** paper copies of the Proposal to the MDOT project manager named in the attached scope of services.

These copies must be received by **[April 21, 2006]**. Fax and electronic copies are not acceptable.

In addition, provide one **bound** copy to:

Regular Mail:
Secretary, **Operations Contract Support**
Michigan Department of Transportation
P.O. Box 30050
Lansing, MI 48909

OR

Overnight Mail:
Secretary, **Operations Contract Support**
Michigan Department of Transportation
425 W. Ottawa
Lansing, MI 48933

This copy is to be received within three working days after the due date and time specified above. Please do not deliver in person.

Any questions relative to the scope of services must be submitted by e-mail to the MDOT project manager. Any questions must be asked at least three working days prior to the due date and time specified above. All questions and their answers will be placed on the MDOT website as soon as possible after receipt of the questions. The names of vendors submitting questions will not be disclosed.

For a cost plus fixed fee contract, the selected vendor must have a cost accounting system to support a cost plus fixed fee contract. This type of system has a job-order cost accounting system for the recording and accumulation of costs incurred under its contracts. Each project is assigned a job

number so that costs may be segregated and accumulated in the vendor's job-order accounting system.

The selection team will review the information submitted and will select the firm considered most qualified to perform the engineering services based on the proposals. The selected vendor will be contacted to confirm capacity. Upon confirmation, that firm will be asked to prepare a priced proposal. Negotiations will be conducted with the firm selected.

The maximum allowable pages for the proposal are limited to the selected Tier shown on MDOT Form 5100B, which is posted with this RFP. Page limits apply to the entire proposal. The number of pages per section is the decision of the creator of the proposal. Include in proposal only those items that are checked by the MDOT project manager on form 5100B.

MDOT is an equal opportunity employer and MDOT DBE firms are encouraged to apply. The participating DBE firm, as currently certified by MDOT's Office of Equal Opportunity, shall be listed in the Proposal.

The scope of services is attached to this solicitation.

**MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS TECHNICAL SERVICES**

**SCOPE OF SERVICES
for
DETAILED INSPECTION OF
CHARLEVOIX & MILITARY ST. BASCULE BRIDGES
CS: 15012 & 77052
JN: 87185**

PROJECT LOCATION:

B01-15012 US-31 over Island Lake Outlet (Charlevoix)
Rolling Lift Bascule
City of Charlevoix
MDOT North Region

B02-77052 I-94BL over Black River (Military St.)
Rolling Lift Bascule
City of Port Huron
MDOT Metro Region

DESCRIPTION OF WORK: The Construction & Technology Support Area of the Michigan Department of Transportation (MDOT) is seeking a proposal from a pre-qualified vendor (CONSULTANT) to perform a detailed inspection of the movable bridges listed and prepare a report. This report will have several components as noted below and will be reviewed, signed, and sealed by a Professional Engineer registered in the state of Michigan.

Primary Pre-Qualification Classification:	Movable Span Bridge Design
Secondary Pre-Qualification Classification:	Bridge Safety Inspections

The anticipated start date of the service is **May 17, 2006**.

The anticipated completion date for the service is **October 27, 2006**.

DBE Requirement: 0%.

MDOT PROJECT MANGER

Rich Kathrens, P.E.	(517) 322-6092
Construction & Technology	(517) 322-5664 Fax
Secondary Complex	(517) 749-4274 Mobile
8885 Ricks Road	kathrensr@michigan.gov
Lansing, MI 48909	

I. DURATION & SCHEDULE

A. Work Plan & Schedule

The CONSULTANT must develop a work plan that details the process of inspecting the bridge listed. The breakdown of the hours/days of the inspected components or elements will enable MDOT to coordinate the scheduling for use of the under bridge crane, and MDOT forces or contract agencies to open, clean and lubricate the inspected components.

The CONSULTANT is also required to develop a Project Schedule for the project showing major tasks during the fieldwork and report preparation. The Project Schedule must be submitted in the form of a Gantt chart showing meeting dates, report submissions, etc. as milestones.

The inspection of the mechanical and electrical components will be during normal periods of operation. The normal periods of operation for these structures are as defined in the current edition of the United States Coast Pilot 6. Inspection of the machinery rooms and electrical operations of the lift bridge will be permitted on weekends with minimum disruption to traffic and as approved by MDOT. Inspection of machinery and electrical operations will not be permitted on state holidays without prior approval.

The CONSULTANT will be responsible for coordination with the United States Coast Guard prior to inspection activities. If required, Coast Guard approval must be granted before disassembling any mechanical elements, which would leave the bridge inoperable. The Coast Guard will set the maximum time durations for the bridge to be inoperable.

The CONSULTANT must be prepared to begin the field inspection work within one week after receiving Notice to Proceed (NTP). MDOT's project manager may stop and reschedule the field inspection if there are significant disruptions to traffic.

The Work Plan and Schedule will be submitted as part of the Fee Proposal. Changes to the Work Plan or Schedule will be submitted to MDOT's Project Manager for approval. Coordination of lane closures, temporary bridge closures will be coordinated with the MDOT Project Manager, and the local MDOT TSC. Lane/Bridge Closures will not be permitted during special local events/holidays without prior approval. A list of events with dates will be provided to the CONSULTANT for use during the development of the Work Plan and Schedule.

B. Meeting Dates

The CONSULTANT is required to attend a Project Initiation Meeting and two Progress Meetings. The expected period for these meetings are shown below, however, these may be adjusted as mutually agreed to by MDOT's Project Manager and the CONSULTANT.

Project Initiation Meeting: One week after NTP (before beginning any field work.)

Progress Meetings:

- (1) At the completion of field work
- (2) At the completion of the "draft" Report

See section IV-MEETINGS for a description of the CONSULTANT's responsibilities.

II. STAFF QUALIFICATION REQUIREMENTS

This detailed inspection will require an experienced team of structural, mechanical, and electrical personnel. The CONSULTANT must provide personnel with qualifications that meet or exceed the requirements stated below. The CONSULTANT must staff the project with the number of personnel necessary to complete the project in the allotted time. The CONSULTANT must have all these individuals present during the fieldwork to fulfill the requirements of the contract.

A. Project Manager/Team Leader

Professional registration as an engineer, licensed to practice in the State of Michigan.

Five (5) years of recent documented experience in the in-service detailed inspections of movable bridges.

Completed the National Highway Institute (NHI) two week class "Safety Inspection of In-Service Bridges" within the last five years. If the team leader(s) has attended this class more than five years ago, he / she must have taken the refresher course within the preceding five years.

Only one manager level position will be allowed and paid for on this project.

B. LEAD INSPECTORS for Structural, Mechanical, Hydraulic, and Electrical

Professional registration as an engineer to practice engineering in their area of expertise.

Three (3) years of recent documented experience in inspection, design, or construction of movable bridges in their area of expertise.

The above listed NHI class for the Team Leader(s) are encouraged, but not required, for the Lead Inspectors.

C. FIELD STAFF assisting the Lead Inspectors and Team Leader

A technical staff person with two (2) years experience in inspection, design, or construction of movable bridges, or a recent graduate engineer working at the staff engineer or entry level position.

Changes made to the Project Manager/Team Leader or Lead Inspectors that occur after the authorization will be submitted in writing for MDOT's project manager's approval. Failure to comply with this request may result in termination of the contract.

The project manager/ team leader will be responsible for writing the Inspection Report and will be the primary contact with MDOT's project manager.

III. GENERAL DESCRIPTION OF THE WORK

The work associated with this project is broken into two phases (I) Site inspection/data gathering, and (II) Report Preparation. Both phases must be completed for successful completion of the project.

The CONSULTANT will provide a thorough inspection of the structural, mechanical, hydraulic, and electrical components of these movable bridges and provide a report. The inspection of this movable bridge will also include the approach spans and pavement. The report will identify current conditions of the structure and the significance of the findings and make recommendations.

The following provisions are the minimum for this contract. The CONSULTANT may elect to suggest activities in the proposal that will improve the inspection or save costs:

A. Phase I – SITE INSPECTION

The CONSULTANT will investigate the condition of the bridges and identify areas of deterioration, with the inspection focusing on the bridge operation, span balance determination, mechanical, electrical, hydraulic, and structural components. Any condition requiring immediate corrective action will be reported promptly to MDOT's Project Manager by telephone and then in writing within one week of the finding.

1. Structural Inspection:

The structural inspection will be performed in accordance with the National Bridge Inspections Standards (NBIS) and AASHTO's Movable Bridge Inspection, Evaluation, and Maintenance Manual (1998). The CONSULTANT will mark-up in red the previous MDOT Bridge Inspection Report (BIR), inspecting and rating the listed elements. Copies of the previous BSIR report and SIA form will be provided. The CONSULTANT will use the Michigan Bridge Inspection System (MBIS) to electronically update the condition ratings for each element. The completed forms of the BSIR, SIA, and WORK RECOMMENDATIONS will be included in the appendix of the final report.

In addition, a detailed inspection of the superstructure and substructure elements will be performed as listed below.

- a. **Superstructure:** Inspection of members/elements will include investigating for cracks, corrosion, spalls, unusual movement, settlement, changes in alignment, and loose connections. The concrete deck surface will be sounded with a hammer or chain drag, and delaminated, spalled, and cracked areas on the deck surface will be marked with chalk or chalk paint to be visible in photographs. (The use of surveyors paint will not be allowed)

The percent of deck surface and soffit deficiencies will be noted in the report. Cracks in steel members will be marked in the field for easy location, using dye penetrant. Losses due to corrosion will be measured using an ultrasonic thickness gauge to determine the amount of section remaining. Where section loss greater than 20% is discovered, a sketch will be provided indicating the location, size, and shape of the steel deficiency. The inspection of fracture critical elements will involve identifying locations and providing description of these elements with sketches. The inspection of the superstructure will include, but not be limited to the following elements:

- Bridge deck systems, such as concrete slab, steel grid and overlay. The steel grid decks will be examined for section loss due to corrosion, cracking of the bars, cracking of welds, and loose bolts/rivets
- Structural steel trusses, girders, stringers, floor beams, including connection and supporting members such as stiffeners, diaphragms, cross frame laterals, brackets, pins, bearings, and shear transfer devices.
- Live Load Bearings and Span Locks.
- Bridge railing, sidewalks, safety walks, median barriers and hand rails.
- Expansion joints and other joints
- Supports for the bridge lighting

- Paint or other protective systems
- Drainage inlets, troughs, down spouts, and supports
- Bridge lighting and supports or other protective systems
- Evaluate MIOSHA access requirements for maintenance personnel
- Evaluate and document substandard features not meeting current design requirements, i.e. railing, deck cross section, sight distance, grades, etc.
- Forty feet of approach pavement, sidewalks, and slopes

- b. **Substructure(above water surface):** The substructure elements including abutments, piers, fender systems, pile clusters or dolphins will be inspected for damage, distortion, delamination, cracks, corrosion, spalls, and movement/settlements. In addition, wood elements will be inspected for defects such as checks, splits, and decay. Concrete members will be sounded with a hammer to determine any delamination, check for spalling, exposure of reinforcing steel and cracking. These deteriorated areas will be marked with chalk to be visible in photographs, and quantities will be measured for repair estimates. Steel members will be inspected for corrosion, distortion, and section loss. The CONSULTANT will provide sketches of cracks measured in linear feet and spalls/delaminations measured in square feet, with the depth of spall given in inches.

2. **Mechanical Inspection**

Every component of the mechanical system will be inspected. Components will be inspected for leakage, cracks, unusual noise, corrosion and wear. The inspection of the drive system and auxiliary drive system will be inspected for, but not limited to, counterweight sheaves, shafts, bearings, counterweight ropes, brakes, gear sets, speed reducers, couplings, mounted bolts, span machinery supports and anchorages. Components will be opened, and cleaned by MDOT or an authorized contract agency personnel for inspection as directed by the CONSULTANT to enable the CONSULTANT to measure the thickness of the gear teeth, gear set backlash, gear set clearance, bearing clearances (including trunnions), and observe the conditions of the wearing surfaces. The CONSULTANT will note any lubrication needed for the open gear sets.

- a. **Bridge Operation:** The operation of the bridge will be observed in all operational modes to investigate the condition of the drives, the functionality of the traffic signals, bells and gates, interferences between movable and stationary parts of the bridge, controllability of the moving span, the effectiveness of the stabilizing machinery, and the span balance determination. During operation, the machinery will be monitored for abnormal noises and vibration.
- b. **Span Balance Determination:** The balance test of the bascule span will be part of the inspection. Span balance determination will be completed using Strain Gauge balancing techniques. If determined that the structure is out of balance, the CONSULTANT will provide technical support during the balancing operation to resolve the imbalances. MDOT will supply forces to add/remove counterweights blocks as needed.
- c. **Testing:** The CONSULTANT may determine that other non-destructive testing beyond what's mentioned in the Scope of Work is needed to make a better judgment. However, such testing (ultrasonic, magnetic particle testing, acoustic emission, etc.) must be approved by MDOT's Project Manager. If the project manager approves the

test, the CONSULTANT must submit a testing proposal. The testing proposal will show what bridge tests are to be performed, what specific information is to be gained from testing, and how the information is to be used. Proposals submitted with insufficient information will be denied.

The mechanical components that stabilize the movable span when it is in motion and at rest will be inspected. The components to be inspected include, but are not limited to, span guides, counterweight guides, counterweights, balancing chains, centering devices, span locks and drives, buffers, bump blocks and live load supports or wedges. In addition, the traffic barriers and gates will be inspected.

3. Hydraulics Inspection

Depending on the type of hydraulic machinery present the in-depth inspection will include but not be limited to hydraulic actuators, tail locks, hydraulic cylinders, and hydraulic motors, pumps, filters, hoses, piping and interconnecting pipes, hydraulic fluid, accumulators, and associated supports, couplings and fittings. All major components will be visually inspected for leaks, overheating, seal condition, misalignment, unusual noise or vibration. Oil samples, if necessary, will be taken to determine the level of contamination and wear, additive and other applicable tests

4. Electrical Inspection

This includes the visual inspection and testing of electrical components of the drive, stabilizing, control system, bridge lighting, auxiliary generator, submarine cable and flexible cables, and bridge safety features. The bridge safety features include the navigational lights, horns/bells, traffic lights, gates, and safety interlocks. The electrical equipment inspection will include, but not be limited to the following; a detailed examination for smooth operation, uniform and regular movement, proper mounting, applied tension, vibration, overheating, wear, rust, carbon deposits, loose terminations, noise, lubrication, alignment, clearances, spring tension, arching, insulating fluid levels, insulating fluid contamination, dirt contamination, insulation conditions, system grounding, enclosure grounding, equipment grounding, bonding, current/ voltage/ kilowatt readings, weather tightness, safety, and signs of distress or pending distress. In addition, the inspection will also include insulation tests of all major electrical components and lead current tests on the electrical drives.

For constant voltage drive systems (DC or Sinusoidal AC), the power consumed by the normal drive motors will be measured and recorded on a strip chart during the test opening/closing of the movable span. The results of the test will be reviewed for any defects or inconsistencies.

B. Phase II - INSPECTION REPORT

The deliverable for this contract will be the inspection report. The report must include descriptions and observations of the inspection procedures, conditions found during inspection and operation, span balance determination, and testing for the members of the mechanical, hydraulic, electrical, and structural systems. The report will also describe the significance of the findings. All units of measurement in the report to be presented in English units. Typical forms that have been developed and used in the inspection will be included in the report. The detailed inspection report will be presented in this manner:

- Cover Sheet
- Table of contents
- General Introduction
- Structural, Mechanical, Hydraulic, Electrical
 - Description & Inspection Findings
- Conclusions
- Recommendations and cost estimate
- Bridge inspection check list
- Appendix

The bridge inspection checklist will include the general conditions and rating of the inspected components of interest, with rating recommendations of the elements listed in the BIR form. The Appendix Section will include test reports, recorded readings, tables, sketches, schematics, and color photographs.

Four (4) draft copies of the report will be provided to the MDOT Project Manager. One of these will be marked up by MDOT with comments and returned to the CONSULTANT for review. A progress meeting will be held with the MDOT representatives and the CONSULTANT to review and discuss comments. All remaining color photos will be returned for use in the final report. The CONSULTANT will then incorporate revisions into the final report. MDOT reserves the right to request additional drafts for review if, in the opinion of MDOT's Project Manager, the changes required are extensive. The contract will be unsatisfactory if the CONSULTANT fails to make changes to the report as required by MDOT's Project Manager.

The CONSULTANT will submit four (4) 3-ring bound copies of the final report. The final report will also contain one Compact Disk (CD) with electronic copies of the final report.

1. Photographs

All photographs will be color and captioned. All prints must be original. However, laser copies of photographs, scanned prints, and prints from digital electronic cameras may be used as substitutes if resolution and quality are acceptable to the department. The date the photograph was taken and bridge number will always be marked on the front of the photograph. Photographs will be mounted on 8.5" x 11" media and include a location drawing.

Photographs, at a minimum, will include the general arrangement of the drive and stabilizing machinery, hydraulic and electrical components. The structural element photographs will include the elevation view of the sides, views of the typical condition of the bridge deck surface and underside, deck joints, typical superstructure elements, abutments, piers, slope protection, waterway, approach, and fender system. In addition, the photograph will show major components and deteriorated areas and defects.

2. **Recommendations:** The recommendations will include immediate repairs, within the next three years, and future repairs. The recommendations should include changes, if any, in the operating and maintenance, inspection, and testing procedures necessary to improve the overall safety and life expectancy of the equipment. A detailed Scope of Work for rehabilitation is to be provided. The Scope of Work will include proposed method, quantities, unit prices, and cost estimates of the rehabilitated/repair components.

IV. MEETINGS

A mandatory project initiation meeting will be held with the CONSULTANT **before** the start of the site inspection work. The project manager will be required to attend the meeting that will be held at the MDOT, Construction and Technology Support Area, 8885 Ricks Road, Lansing, Michigan 48909 or at a location that is mutually agreed to.

This meeting is intended to exchange information regarding the general procedures for communication, review the schedule, discuss emergency procedures and communication, and discuss any open questions that remain. The meeting will be attended by MDOT Region and Statewide staff.

Two progress meetings will be held; one to review the data collected during the field evaluation work and one to review the laboratory testing results and draft Report.

The CONSULTANT will keep notes of these meetings and provide minutes to the MDOT Project Manager within one week after the meeting.

V. EQUIPMENT

MDOT will provide one under bridge crane for the CONSULTANT's use for the inspection and will be responsible for maintaining and setting up traffic control, except on weekends and state holidays. The CONSULTANT must provide all of the necessary inspection tools/specialized equipment for completion of the inspection.

The CONSULTANT must provide all of the necessary personal safety equipment for each employee at the work site. All equipment must be in sound working order, meeting applicable inspections for safe operation. Lost time due to equipment failures will not be paid for.

VI. SAFETY

MDOT requires safe working operations. The CONSULTANT's employees must be trained in all the applicable state and federal regulations as well as industry practices for the work being performed. It is not the responsibility of MDOT to verify the CONSULTANT's safety practices; however, the MDOT PM has the authority to have any individual who is found working unsafely removed from MDOT right of way. If the CONSULTANT is found to be working unsafely, the MDOT PM can stop all operations and terminate the contract.

VII. EXISTING RECORDS AND DATA

MDOT will furnish the CONSULTANT access to any available pertinent information related to the structure(s) being inspected.

Information furnished to the CONSULTANT will not be released or distributed to any outside agency without written permission from MDOT's Project Manager.

VIII. VENDOR PAYMENT

All invoices/bills for services must be directed to the Department and follow the 'then current' guidelines. The latest copy of the "Professional Engineering Service Reimbursement Guidelines for

Bureau of Highways” is available on MDOT's Bulletin Board System. This document contains instructions and forms that must be followed and used for invoicing/billing; payment may be delayed or decreased if the instructions are not followed.

Payment to the Vendor for Services rendered shall not exceed the “Cost Plus Fixed Fee Not to Exceed Maximum Amount” unless an increase is approved in accordance with the contract with the Vendor. All invoices/bills must be submitted within 14 calendar days of the last date of services being performed for that invoice.

Direct expenses will not be paid in excess of that allowed by the Department for its own employees. Supporting documentation must be submitted, with the invoice/bill, for all billable expenses on the Project. The only hours that will be considered allowable charges for this contract are those that are directly attributable to the activities of this Project. Hours spent in administrative, clerical, or accounting roles for billing and support, are not considered allowable hours; there will be no reimbursement for these hours.

The use of overtime hours is not acceptable unless prior written approval is granted by the MDOT Region Engineer and the MDOT Project Manager. Reimbursement for overtime hours that are allowed will be limited to time spent on this project in excess of forty hours per person per week. Any variations to this rule should be included in the price proposal submitted by the vendor and must have prior approval by the MDOT Project Manager.

IX. GENERAL

Release of information: The CONSULTANT may not release any information about the bridge or the inspection to anyone outside of MDOT. The CONSULTANT is not allowed to make copies of the information in the bridge files unless given written approval from the MDOT Project Manager.

References and Guidelines: Below is a list source of reference documents that the CONSULTANT is expected to be familiar with and use to complete the inspection and report:

- AASHTO, Standard Specifications for Highway Bridges and for Movable Highway Bridges
- AASHTO Manual for Condition Evaluation of Bridges
- AASHTO Manual for Maintenance Inspection of Bridges
- AASHTO Movable Bridge Inspection, Evaluation, and Maintenance Manual
- Federal Highway Administration (FHWA)
Publications: Inspection of Fracture Critical Bridge Members, Bridge Inspectors Reference Manual (BIRM), Underwater Inspection of Bridges
- Manual on Uniform Traffic Control Devices for Streets and Highways
- National Electrical Code
- National Fluid Power Association
- American Society for Testing and Materials (ASTM)
- National Electrical and Electronics Engineers, Inc
- National Bridge Inspection Standards (NBIS)
- American Welding society
- And other references pertaining to Design and Inspection of Bridges. Such as American Society of Mechanical Engineers (ASME), Anti Friction Bearing Manufacturers Association (AFBMA) etc.